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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,710	12/09/2003	Xian Yao	50547/CM/M277	5454
23363 7590 01/05/2007 CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068			EXAMINER ZHU, WEIPING	
			ART UNIT	PAPER NUMBER
			1742	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/05/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/731,710

Applicant(s)

YAO ET AL.

Examiner

Weiping Zhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/27/2004
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claim 34 has been amended and claim 35 has been canceled in the applicant's amendment filed on December 8, 2006. Claims 1-11 and 13-34 are currently under examination.

### ***Status of Previous Rejections***

2. This is in response to the amendment filed by the applicants on December 8, 2006. In view of the argument and amendment, the finality of the rejection applied to claims 1-11 and 13-35 under U.S.C. 103(a) in the Office action mailed on October 10, 2006 has been withdrawn.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-11 and 13-35 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-11 and 13-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho (US Pat. No.: 4,534,934).

With respect to claims 1, 3, 6, 10, 21 and 23, Cho ('934) discloses a process improvement for making diamond wire die compacts comprising:

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providing a refractory metal shield cup (col. 2, lines 37-52);

placing a metal carbide cylindrical substrate and diamond particles in the shield cup (col. 2, lines 37-52);

disposing Co discs on both sides of the diamond mass (col. 5, lines 11-17) (the Co discs herein would provide similar functions as claimed metallic liner);

sintering (col. 2, lines 42-44) to convert diamond particles to a diamond layer with a uniform concentration and a peripheral portion infiltrated by the diamond catalyst /solvent disks ( col. 2, lines 34-36);

removing any adhering metal from the shield metal cup or the discs and distortion or surface irregularity (col. 4, lines 13-15).

Cho ('934) does not teach removing the peripheral portion infiltrated by the metallic liner as in the claim 1. However in the removing step of Cho ('934), removing the peripheral portion infiltrated by the Co discs would have been expected to one skilled in the art because Cho ('934) specifically discloses that all distortion or surface irregularity is removed.

With respect to claims 13, 21 and 23, Cho ('934) does not teach that:

a). the depth of the infiltration of Co into the diamond mass from the peripheral portion;

b). the eutectics formed in the sintering process and their melting temperatures as in the claim 21;

c). the Co discs form a plastically deformable region for preventing the formation of cracks on the diamond compact adjacent the plastically deformable region during a cooling phase of the sintering as in the claim 23.

However it has been well held where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical process, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977), MPEP 2112.01 [R-3] I. In the instant case, the claimed and the prior art products and processes are identical or substantially identical. The sintering temperature and pressure of Cho ('934) are at least 1300° C and at least 50 kilobars (see col. 2, lines 42-44) respectively (which are within the disclosed ranges (1200-1600° C and 40-65 kilobars respectively; page 6, lines 16-17, specification of the instant invention)). Therefore a prima facie case of obviousness exists. The same infiltration depth, eutectics and plastic deformation would be expected in the process and the product of Cho ('934) as in the claimed process and product.

With respect claims 2, Cho ('934) discloses the shield metal may be selected from Zr, Ta, Ti, W and Mo metals (col. 2 lines 50-52).

With respect to claims 4 and 5, Cho ('934) discloses that the discs are sandwiched between the diamond mass and the shield cup and that the discs are disposed adjacent to the peripheral wall of the shield cup (col. 5, lines 11-17).

With respect to claim 11, Cho ('934) does not teach making wire dies with cubic boron nitride. However cubic boron nitride and diamond are functionally equivalent ultra

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hard materials because of the similarities in physical and chemical properties between these two materials. The substitution of diamond by its functionally equivalent cubic boron nitride in Cho ('934) would lead to the expected success. See MPEP 2144.06.

With respect to claim 14, Cho ('934) discloses that using the process improvement the cracking rate of blanks out of the press was reduced from 15-35% to 0-5% (col. 6, lines 4-11).

With respect to claim 16, Cho ('934) discloses that the process improvement is used to make a reliable wire drawing die (abstract) which can also be considered a cutting element.

With respect to claims 17 and 18, Cho ('934) discloses that the discs are in the form of thin circular disc (col. 5, lines 11-17).

With respect to claim 19, Cho ('934) discloses that the Co discs form a continuous peripheral layer around the enclosure (col. 5, lines 11-17).

With respect to claim 20, the melting temperature of the Co discs is lower than that of the Mo shield cup in the process of Cho ('934).

With respect to claims 7-9, 15, 22, 24-26 and 30, these claims are all related to the eutectics formed during the sintering and their melting temperatures. Therefore the reasons for the rejection applied to the instant claim 21 above would be properly applied to these claims.

With respect to claims 27, 31-33, Cho ('934) discloses that the metallic discs are made of elemental Co, which does not include carbide (col. 5, lines 11-17).

With respect to claim 28, Cho ('934) discloses that the sintering converts the diamond mass together with Co discs to a solid hard layer (col. 5 line 68 to col. 6, line 3).

With respect to claim 29, Cho ('934) discloses that Co cemented tungsten carbide is preferred as the substrate material (col. 4, lines 16-21).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 34 is rejected under 35 U.S.C. 102(b) as being anticipated by Cho (US Pat. No.: 4,534,934).

With respect to claim 34, Cho ('934) was applied to the claimed limitations as stated in the paragraph 4. above. Cho ('934) further discloses that the Co discs are about 50 microns thick (col. 5, lines 31-34), which is within the claimed thickness range.

***Conclusion***

6. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WZ

1/5/2007

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